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“Steps in the right direction”

Photo courtesy of Berni Wood

ViTRAK CEO Crystal Lavallee points to one of her company's electronically interactive floor tiles that measures footprint analytics for humans and animals. The P.E.I. company has launched a revolutionary gait analysis system with the potential to...

Revolutionary gait analysis system being developed on P.E.I.

By Margaret Magner

Special to The Guardian

At the Historic Bonded Warehouse on the Charlottetown waterfront, once a repository for thousands of gallons of bootlegged rum from the infamous schooner Nellie J. Banks, new history is being made — the launch of a revolutionary gait analysis system with the potential to transform how athletes are trained, dementia patients monitored and high security areas regulated.



Envisioned by P.E.I. inventor and technology advisor Michael Power, the Sensor Floor Gait Analysis System developed by Charlottetown's ViTRAK Systems Inc. provides sophisticated proprietary footprint analytics capable of measuring changes in human and animal movement in an unobtrusive manner.

Electronically interactive tiles, typical in size and thickness to standard flooring, are embedded with highly responsive measurement sensors which, combined with unique data analysis software, deliver immediate and accurate biomechanical assessment.

Unlike its competitors, ViTRAK's Stepscan™ technology tracks multiple subjects simultaneously; measures arbitrary movement; monitors continuously; forms a customized measuring platform up to 400 square feet; and meets international standards for pressure-measure devices.

ViTRAK CEO Crystal Lavallee, a molecular biologist and respected bioscience researcher, project manager and consultant, has been instrumental in the commercialization of the company's patented system.

Moving to Prince Edward Island from New Brunswick to study at the Atlantic Veterinary College, Lavallee met Mike Power when the technology was in its initial stages.

"I did diagnostic, marketing and business plans for Mike early on and couldn't let it go."

Raised, like Power, in a military family, she understood his determination and the scope of his vision. With a talented team, Lavallee has moved the Stepscan™ system from conceptualization through final development, with the launch of the product line in mid-2013.

"This is a game changer," she says. "My motivation is to be extremely successful for Mike. The company has momentum and I know it will thrive. Our product development ideas will keep us busy for years."

Lead software design engineer Richard McKinnon, an Islander with decades of related development experience, including eight years at Microsoft headquarters, is vitally aware of the far-reaching promise of Stepscan™ software fully realized.

Researchers, doctors, veterinarians, and physiotherapists can conduct unobtrusive observation related to humans and animals. Diagnosis is noninvasive and less stressful for patients as they recover. Monitoring floor systems, at home and in hospitals, for those with dementia provide information to caregivers to enhance patient safety.

Sports training requiring accurate movement analysis can generate corrective measures by systematically understanding how a Sidney Crosby accelerates or a sprinter's ideal positioning within a starting block.

Rory Francis, executive director of the P.E.I. BioAlliance, is aware ViTRAK's expertise in engineering and information technology might initially seem unorthodox for a member of P.E.I.'s Bioscience Cluster.

"An important application of ViTRAK's technology is assessment of sway/balance and walking disorders, pertinent to the early detection and treatment of neurological diseases such as Alzheimer's, Parkinson's, and ALS — a focus for several P.E.I. companies and research centres, including UPEI and the National Research Council, and Halifax's Brain Repair Centre."

ViTRAK Systems has forged innovative research partnerships to advance the field of gait biometrics. Collaboration with UNB Professor Chris McGibbon focuses on the software capabilities of sensor floor prototypes, supported by funding from the Natural Science Engineering and Research Council of Canada.

AVC Professor Trina Bailey and colleagues participate in the design and evaluation of Stepscan™ technology relevant to their canine bone and ligament research. ViTRAK also recently won a \$1.4 million ACOA Atlantic Innovation Fund award supporting Stepscan™ technology and its P.E.I. commercialization.

Early adaptors are fascinated by the potential for sensor floor gait analytics within high-security facilities that must rapidly identify permitted or prohibited activities. And, if a subject's gait profile is indeed as unique as a fingerprint, biometric footprints may join fingerprints and retinal scans in leading-edge identification procedures.

Pioneering Stepscan™ software under development could also lead to 3D motor simulation and analysis applicable to military training models and video gaming.

Mike Power, who has persistently promoted his invention for more than a decade, is thrilled to see it finally realized.

“Like any person with a dream, it's difficult to find others who believe in your idea. The ViTRAK team is striving to be the best in the world. I'm proud of them and the technology.”

One in a series of stories about the P.E.I. BioScience Cluster by Margaret Magner, Ph.D., who lives in Charlottetown.